



DEPARTMENT OF TRANSPORTATION
MATERIALS TRANSPORTATION BUREAU
WASHINGTON, D.C. 20590

54958

[49 CFR Parts 173 and 178]

[Docket No. HM-146; Notice No. 76-19]

SHIPPING CONTAINERS

Extension of Service Life of DOT 3HT
Cylinders

The Materials Transportation Bureau (MTB) is considering amending §§ 173.34 and 178.44 of the Department's Hazardous Materials Regulations as they pertain to shipments of certain non-flammable, non-poisonous compressed gases by extending the service life of DOT 3HT specification cylinders from 15 years to 24 years.

DOT 3HT cylinders are made of high strength steel with high operating wall stresses. Because of these high stresses, the authorized service life of the 3HT cylinder is specifically limited. Authorized service life in the original DOT 3HT specification was limited to 4380 pressurization (equivalent to a 12-year life based on once-a-day pressurization) or 12 years, whichever occurred first. In 1970 while retaining the 4380 pressurization limitation, the 12 years was extended to 15 years by Docket HM-31, Amendment Nos. 173-19 and 178-9 (35 FR 5717, March 31, 1970). That docket provided for consideration of further extensions. Sufficient justification was provided.

This proposal is based on the petitions by the Air Transport Association, Inc. (ATA), dated July 17, 1975, and Compressed Gas Association, Inc. (CGA), dated March 6, 1973. These Associations have submitted the results of a comprehensive test program performed on cylinders selected at random representing eight existing 3HT cylinder sizes. The test cylinders selected had been in service for an average of 14.2 years. The test results show that:

1. Each cylinder of the 26 cylinders subjected to a pressure cycling test passed the 10,000 cycles required for new cylinders.

2. Of 24 cylinders that were pressurized to burst, one cylinder failed to withstand the specified minimum burst pressure requirement for new cylinders (2.22 times the service pressure). This cylinder burst at 2.11 times the service pressure. Considering that this cylinder has been in service for 14 years and has successfully passed other prescribed

tests, such as the hydrostatic test, magnetic particle inspection, and visual inspection, this minimal deviation in burst pressure is not considered significant.

3. The test regimen, consisting of but not limited to complete internal and external visual inspection, magnetic particle inspection, hydrostatic testing, cycling and physical testing, was followed and all results obtained were satisfactory.

The ATA, in its supporting data, showed that the field service recharging frequency of these cylinders was estimated to be not more than once in 10 days. Based on the 4,380 pressurization allowed, this is equivalent to 120 years service life.

The MTB agrees that the petitions have merit. In addition, the MTB on its own initiative is proposing to require that the cylinder be permanently marked with its rejection elastic expansion (REE). The reason for this proposal is to make the retester aware of this requirement peculiar only to the DOT 3HT specification. The MTB proposes to amend certain sections in the regulations, covering cylinder rejection due to excessive elastic expansion, as follows:

1. For new cylinders, the REE instead of the original elastic expansion (EE) must be marked on the cylinder.

2. For existing cylinders, the REE must be determined and then marked on the cylinder near the original EE prior to the next retest.

In consideration of the foregoing, it is proposed to amend 49 CFR Parts 173 and 178 as follows:

1. In § 173.34, paragraphs (e) (13)(i) and (e) (13)(iii) would be revised; paragraph (e) (13)(v) would be added to read as follows:

§ 173.34 Qualification, maintenance, and use of cylinders.

* * *

(e) * * *

(13) * * *

(i) Cylinder shall be subjected, at least once in three years, to a test by hydrostatic pressure in a water jacket, for the determination of the expansion of the cylinder. A cylinder must be condemned if the elastic expansion exceeds the marked rejection elastic expansion.

(ii) * * *

(iii) A cylinder must be condemned at the termination of a 24-year period

following the date of the original test or after 4,380 pressurizations, whichever occurs first. If a cylinder is recharged more than an average of once every other day, an accurate record of the number of rechargings must be maintained by its owner, or his agent.

(iv) * * *

(v) A cylinder made before [effective date of this rule] and not yet marked with a rejection elastic expansion (REE) must be marked with that REE in cubic centimeters near the marked original elastic expansion. The REE for a cylinder is 1.05 times its original elastic expansion.

2. Section 178.44-23(a) (4) would be revised to read as follows:

§ 178.44-23 Marking.

(a) * * *

(4) Rejection elastic expansion (REE) in cubic centimeters (cc) near the date of test. The REE for a cylinder is 1.05 times its original elastic expansion.

Interested persons are invited to give their views on these proposals. Communications should identify the docket number and submitted to the Section of Dockets, Office of Hazardous Materials Operations, Department of Transportation, Washington, D.C. 20590. It is requested that five copies be submitted. Communications received on or before March 22, 1977, will be considered before final action is taken on these proposals. All comments received will be available for examination by interested persons at the Office of Hazardous Materials Operations, Room 6500, Trans Point Building, 2100 Second Street, S.W. Washington, D.C., both before and after the closing date for comments.

(49 U.S.C. 1803, 1804, 1808; 49 CFR 1.53(e) and paragraph (a) (4) of App. A to Part 102.)

NOTE.—The Materials Transportation Bureau has determined that this document does not contain a major proposal requiring preparation of an Inflation Impact Statement under Executive Order 11821 and OMB Circular A-107.

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Hazardous Materials Operations.

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